image AND vision COMPUTING

Index of Volume 11 (1993)

No 1 (January/February) pp 1–64
No 2 (March) pp 65–120
No 3 (April) pp 121–176
No 4 (May) pp 177–248
No 5 (June) pp 249–304
No 6 (July/August) pp 305–400
No 7 (September) pp 401–456
No 8 (October) pp 457–536
No 9 (November) pp 537–608
No 10 (December) pp 609–680

Article index

January–February

Recognition of fish species by colour and shape
N.I. Strachan 2
Linear generalized Hough transform and its parallelization
Z.N. Li, B. Yao and F. Tong 11
Spatial database manager for a multi-source image understanding system
D.C. Mason, C. Oddy, A.J. Rye, S.B.M. Bell, M. Illingworth, K. Preedy, C. Angelikaki and E. Pearson 25
Parallel approach to tracking edge segments in dynamic scenes
M. Mirmehdi and T.J. Ellis 35
Pose determination of parameterized object models from a monocular image
R.R. Goldberg 49

March

Auto-calibration by direct observation of objects
J.L. Crowley, P. Bobet and C. Schmid 67
Interpretation of line drawings of complex objects
M.C. Cooper 82
Extraction of vanishing points from images of indoor and outdoor scenes
M. Straforini, C. Coelho and M. Campani 91
Automatic segmentation of hand-wrist radiographs
G. Manos, A.Y. Cairns, I.W. Ricketts and D. Sinclair 100
Mirroring and rotating images with Linear Quadtree form with few machine instructions
G. Schrack and I. Gargantini 112

April

Knowledge-based approach to image interpretation
P. Puliti and G. Tascini 122
Parallel coordination of image operators: model, algorithm and performance
S.-Y. Hwang and S.L. Tanimoto 129
Automated analysis of retinal images
P. Jasiobedzki, C.J. Taylor and J.N.H. Brunt 139
Computing three-dimensional motion parameters: a hypothesis testing approach
C.-H. Lee 145
Segmentation of plant cell pictures
C. Murray and M. O'Malley 155
Euclidean skeleton via centre-of-maximal disc extraction
C. Arcelli and G. Sanniti di Baja 163

May

Special Issue: British Machine Vision Conference 1992

Guest Editor: D.C. Hogg, University of Leeds, UK

Statistical detection of independent movement from a moving camera
P.H.S. Torr and D.W. Murray 180
Recognition of volcanoes on Venus using correlation methods
C.R. Wiles 188
Junction detection using probabilistic relaxation
J. Matas and J. Kittler 197
3D structure and motion estimation from 2D image sequences
T.N. Tan, K.D. Baker and G.D. Sullivan 203
Recognizing polyhedral objects from a single perspective view
K.C. Wong and J. Kittler 211
Image tracking in real-time: a transputer emulation of some early mammalian vision processes
P.H. Welch and D.C. Wood 221
Planar region detection and motion recovery
D. Sinclair, A. Blake, S. Smith and C. Rothwell 229
Chromosome location and feature extraction using neural networks
M. Turner, J. Austin, N.M. Allinson and P. Thompson 235
Vanishing point detection
A. Tai, J. Kittler, M. Petrou and T. Windeatt 240

June

3D scene modelling by sinusoid encoded illumination
D.C. Hung 251
Overlapping quadtrees for the representation of similar images
M. Vassilakopoulos, Y. Manolopoulos and K. Economou 257
Online recognition by deviation-expansion model and A* algorithm-based matching
C.-K. Lin, K.-C. Fan and F.T.-P. Lee 263
An efficient approach to the identification of characteristic intensity variations
K. Rohr and C. Schnörr 273

Image reconstruction by a Hopfield neural network
V. Srinivasan, Y.K. Han and S.H. Ong 278
Techniques for online gesture recognition on workstations
K.V. Mardia, N.M. Ghali, T.J. Hainsworth, M. Howes and N. Sheehy 283
Connective Hough transform
S.Y.K. Yuen, T.S.L. Lam and N.K.D. Leung 295

July–August

Special Issue: Understanding Shape: Perspectives from Natural and Machine Vision

Guest Editor: Dr R.I.D. Cowie, Queens University, Belfast, Northern Ireland

Shape in machine vision
D.C. Hogg 309
Neurophysiology of shape processing
D.I. Perrett and M.W. Oram 317
Beyond linear perspective: a cubist manifesto for visual science
A. Costall 334
From line drawings to impressions of 3D objects: developing a model to account for the shapes that people see
R. Cowie and R. Perrott 342
Describing the shapes of faces using surface primitives
V. Bruce, A. Coombes and R. Richards 353
Shape using volumetric primitives
R.C. Munck-Fairwood and L. Du 364
Discrimination between visual stimuli by variation of shape and relative position of volumetric primitives
A.M. Wallace, E.E. Brodie and S. Love 372
Issues in shape perception
R.J. Watt 389
Note on small angle approximations for stereo disparity
S. Smith 395

September

Generalized comparison of quadtree and bintree storage requirements
C.A. Shaffer, R. Juvvadi and L.S. Heath 402
Complementary quadtree
Y.-M. Kim and S.-B. Park 413
Variational approach to optical flow estimation managing discontinuities
P. Nesi 419
Using line correspondences in invariant signatures for curve recognition
R.J. Holt and A.N. Netravali 440
Fast component labelling and convex hull computation on reconfigurable meshes
S. Olariu, J.L. Schwing and J. Zhang 447

October

Special Issue: Medical Image Processing

Guest Editor: Dr Jan Cornelis, Vrije Universiteit Brussel, Belgium

Structure-sensitive adaptive contrast enhancement methods and their evaluation
R. Cromartie and S.M. Pizer 460
Computer assisted stereotactic neurosurgery
R. Verbeeck, D. Vandermeulen, J. Michiels, P. Suetens, G. Marchal, J. Gybels and B. Nuttin 468
Segmentation of medical images
R. Deklerck, J. Cornelis and M. Bister 486
Methodology for the representation, indexing and retrieval of images by context
E.G.M. Petrakis and S.C. Orphanoudakis 504
Workstation environment for image processing in nuclear medicine
D. Tombeur, A. Bossuyt and F. Deconinck 522

November

Automatic thresholding based on human visual perception
D.-C. Tseng and M.-Y. Huang 539
Motion and structure estimation using long sequence motion models
X. Hu and N. Ahuja 549
Hierarchical segmentation-based approach to motion analysis
G. Healey 570
Motion constraint equations based on constant image irradiance
J. Arnspang 577
A novel fast and reliable thinning algorithm
D. Kalles and D.T. Morris 588

December

Quantitative study of 3D gradient operators
Y.J. Zhang 611
Computing the Hough transform on reconfigurable meshes
S. Olariu, J.L. Schwing and J. Zhang 623
Autofocusing for tissue microscopy
T.T.E. Yeo, S.H. Ong, Jayasooriah and R. Sinniah 629
Detection and tracking of single-pixel targets based on trajectory continuity
G. Wang and R.M. Inigo 641
On the sensitivity of camera calibration
J.S.C. Lai 656
Connected component labelling on the BLITZEN massively parallel processor
S.G. Ziavras 665

Author index

Ahuja, N. 549
Allinson, N.M. 235
Angelikaki, C. 25
Arcelli, C. 163
Arnspagn, J. 577
Austin, J. 235

Baker, K.D. 203
Bell, S.B.M. 25
Bister, M. 486
Blake, A. 229
Bobet, P. 67
Bossuyt, A. 522
Brodie, E.E. 372
Bruce, V. 353
Brunt, J.N.H. 139

Cairns, A.Y. 100
Campani, M. 91
Coelho, C. 91
Coombes, A. 353
Cooper, M.C. 82
Cornelis, J. 486
Costall, A. 334
Cowie, R. 342
Crowley, J.L. 67
Crowmartie, R. 460

Deconinck, F. 522
Deklerck, R. 486
Du, L. 364

Economou, K. 257
Ellis, T.J. 35

Fan, K.-C. 263

Gargantini, I. 112
Ghali, N.M. 283
Goldberg, R.R. 49
Gybels, J. 468

Hainsworth, T.J. 283
Han, Y.K. 278
Healey, G. 570
Heath, L.S. 402
Hogg, D.C. 309
Holt, R.J. 440
Howes, M. 283
Hu, X. 549
Huang, M.-Y. 539
Hung, D.C. 251
Hwang, S.-Y. 129

Illingworth, M. 25
Inigo, R.M. 641

Jasiobedzki, P. 139
Jayasooriah 629
Juvvadi, R. 402

Kalles, D. 588
Kim, Y.-M. 413
Kittler, J. 197, 211, 240

Lai, J.Z.C. 656
Lam, T.S.L. 295
Lee, C.-H. 145

Lee, F.T.-P. 263
Leung, N.K.D. 295
Li, Z.N. 11
Lin, C.-K. 263
Love, S. 372

Manolopoulos, Y. 257
Manos. G. 100
Marchal, G. 468
Mardia, K.V. 283
Mason, D.C. 25
Matas, J. 197
Michiels, J. 468
Mirmehdi, M. 35
Morris, D.T. 588
Munck-Fairwood, R.C. 364
Murray, C. 155
Murray, D.W. 180

Nesi, P. 419
Netravali, A.N. 440
Nuttin, B. 468

O'Malley, M. 155
Oddy, C. 25
Olariu, S. 447, 623
Ong, S.H. 278, 629
Oram, M.W. 317
Orphanoudakis, S.C. 504

Park, S.-B. 413
Pearson, E. 25
Perrett, D.I. 317
Perrott, R. 342
Petrakis, E.G.M. 504
Petrou, M. 240
Pizer, S.M. 460
Preedy, K. 25
Puliti, P. 122

Richards, R. 353
Ricketts, I.W. 100
Rohr, K. 273
Rothwell, C. 229
Rye, A.J. 25

Sanniti di Baja, G. 163
Schmid, C. 67
Schnörr, C. 273
Schrack, G. 112
Schwing, J.L. 447, 623
Shaffer, C.A. 402
Sheehy, N. 283
Sinclair, D. 100, 229
Sinniah, R. 629
Smith, S. 229
Smith, S. 395
Srinivasan, V. 278
Strachan, N.J.C. 2
Straforini, M. 91
Suetens, P. 468
Sullivan, G.D. 203

Tai, A. 240
Tan, T.N. 203
Tanimoto, S.L. 129
Tascini, G. 122
Taylor, C.J. 139
Thompson, P. 235
Tombeur, D. 522
Tong, F. 11
Torr, P.H.S. 180
Tseng, D.-C. 539
Turner, M. 235

Vandermeulen, D. 468
Vassilakopoulos, M. 257
Verbeeck, R. 468

Wallace, A.M. 372
Wang, G. 641
Watt, R.J. 389
Welch, P.H. 221
Wiles, C.R. 188
Windeatt, T. 240
Wong, K.C. 211
Wood, D.C. 221

Yao, B. 11
Yeo, T.T.E. 629
Yuen, S.Y.K. 295

Zhang, J. 447, 623
Zhang, Y.J. 611
Ziavras, S.G. 665

Keyword index

3D gradient operators
Magnitude and direction responses, Edge detection 611
3D motion
Hypothesis testing paradigm, Structure from motion 145
3D scene modelling
Sinusoid encoded illumination, Depth estimation algorithm 251

A cubist manifesto
Linear perspective, Ecological psychology 334
Active vision
Camera calibration, Stereo 67
Autofocusing
Tissue microscopy, Image sharpness 629
Automatic thresholding
Human visual perception, Edge information 539

Boundaries
Transparent plant cells, Segmentation 155

Camera calibration
Active vision, Stereo 67
Sensitivity, Measurement accuracy 656
Centre-of-maximal-disc
Skeletonization algorithm, Euclidean distance map 163
Chinese character recognition
Online recognition, Deviation-expansion model, 263
Colour analysis
Shape recognition, Fish species recognition 2
Complementary quadtree
Computer graphics, Image processing, 413
Component labelling
Image processing, Pattern analysis 447
Two-dimensional mesh, Connected component shrinking 665
Componential models
Object discrimination, Human vision 372
Computational modelling
Object recognition, Pattern processing 317
Shape, Line labelling 342
Computer graphics
Complementary quadtree, Image processing 413
Computer vision
Junction detection, Probabilistic relaxation 197
Optical flow estimation, Motion analysis 419
Line correspondences, Curve recognition 440
Connected component shrinking
Component labelling, Two-dimensional mesh 665
Connectivity
Hough transform, Junction detection 295
Contrast enhancement
Medical images, Image evaluation 460
Correlation methods
Object recognition, Template matching 188
Cubic spline
Identification of characteristic intensity variations, Parametric model 273
Curve recognition
Line correspondences, Computer vision 440

Depth estimation algorithm
3D scene modelling, Sinusoid encoded illumination 251
Deviation-expansion model
Chinese character recognition, Online recognition 263
Digital geometry
Rotation transformations, Quadtrees 112

Ecological psychology
A cubist manifesto, Linear perspective 334
Edge detection
3D gradient operators, Magnitude and direction responses 611
Edge information
Human visual perception, Automatic thresholding 539

Edge tracking
Motion flow model, Parallel tracking 35
Euclidean distance map
Skeletonization algorithm, Centre-of-maximal-disc 163

Face measurement
Recognizing faces, Surfaces 353
Feature extraction
Image recognition, Neural networks 235
Feature variables
Shape, Gesture recognition 283
Fish species recognition
Shape recognition, Colour analysis 2

Geometry
Shape perception, Representation 389
Gesture recognition
Feature variables, Shape 283

Hand-wrist radiographs
Image segmentation, Regions 100
Hierarchical data structures
Quadtree and bintree storage requirements, Image representation 402
Hough transform
Connectivity, Junction detection 295
Image processing, Massively parallel algorithms 623
Human vision
Object discrimination, Componential models 372
Human visual perception
Automatic thresholding, Edge information 539
Hypothesis testing paradigm
3D motion, Structure from motion 145

Identification of characteristic intensity variations
Cubic spline, Parametric model 273
Image databases
Spatial indexing, Image retrieval 504
Image evaluation
Contrast enhancement, Medical images 460
Image interpretation
Pose determination, Model-based verification 49
Segmentation, Knowledge-based system 122
Image irradiance
Motion constraint, Optic flow 577
Image processing
Image understanding, Spatial database management 25
Complementary quadtree, Computer graphics 413
Pattern analysis, Component labelling 447
Object oriented techniques, Nuclear medicine 522
Thinning algorithm, Skeletonization 588
Hough transform, Massively parallel algorithms 623
Image recognition
Feature extraction, Neural networks 235
Image reconstruction
Neural networks, Tomography 278
Image registration
Segmentation motion analysis, Target recognition 570
Image representation
Quadtrees, Overlapping data structures 257
Quadtree and bintree storage requirements, Hierarchical data structures 402
Image retrieval
Image databases, Spatial indexing 504
Image segmentation
Hand-wrist radiographs, Regions 100
Medical image processing, Magnetic resonance imaging 486
Image sequence analysis
Structure and motion estimation, Structure from motion 203
Image sharpness
Autofocusing, Tissue microscopy 629
Image tracking
Mammalian vision, Parallel processing 221
Image understanding
Spatial database management, Image processing 25

Junction detection
Computer vision, Probabilistic relaxation 197
Hough transform, Connectivity 295

Knowledge-based system
Image interpretation, Segmentation 122

Labelling
Line drawing interpretation, Machine interpretation 82
Line correspondences
Curve recognition, Computer vision 440
Line drawing interpretation
Labelling, Machine interpretation 82
Line labelling
Shape, Computational modelling 342
Linear Generalized Hough Transform
Object recognition, Parallel processing 11
Linear computational complexity
Vanishing point extraction, Polar space 91

Linear perspective
A cubist manifesto, Ecological psychology 334
Long sequence motion analysis
Motion structure estimation, Polynomial motion models 549

Machine interpretation
Line drawing interpretation, Labelling 82
Magnetic resonance angiography
Stereotactic neurosurgery, Nonlinear filtering 468
Magnetic resonance imaging
Medical image processing, Image segmentation 486
Magnitude and direction responses
3D gradient operators, Edge detection 611
Mammalian vision
Image tracking, Parallel processing 221
Massively parallel algorithms
Image processing, Hough transform 623
Mathematical morphology
Retinal image segmentation, Texture 139
Measurement accuracy
Sensitivity, Camera calibration 656
Medical image processing
Image segmentation, Magnetic resonance imaging 486
Medical images
Contrast enhancement, Image evaluation 460
Model
Shape, Representation 309
Model-based verification
Pose determination, Image interpretation 49
Motion analysis
Optical flow estimation, computer vision 419
Motion constraint
Image irradiance, Optic flow 577
Motion flow model
Parallel tracking, Edge tracking 35
Motion recovery
Planar region detection, Projective invariant 229
Motion segmentation
Statistical detection, Movement detection 180
Motion structure estimation
Long sequence motion analysis, Polynomial motion models 549
Movement detection
Statistical detection, Motion segmentation 180

Neural networks
Feature extraction, Image recognition 235
Image reconstruction, Tomography 278
Nonlinear filtering
Stereotactic neurosurgery, Magnetic resonance angiography 468

Nuclear medicine
Image processing, Object oriented techniques 522

Object discrimination
Componential models, Human vision 372
Object oriented techniques
Image processing, Nuclear medicine 522
Object recognition
Linear Generalized Hough Transform, Parallel processing 11
Correlation methods, Template matching 188
Pose determination, Perspective geometry 211
Pattern processing, Computational modelling 317
Volumetric primitives, Shape representation 364
Online recognition
Chinese character recognition, Deviation-expansion model 263
Optic flow
Motion constraint, Image irradiance 577
Optical flow estimation
Computer vision, Motion analysis 419
Overlapping data structures
Image representation, Quadtrees 257

Parallel processing
Linear Generalized Hough Transform, Object recognition 11
State space parallel search, Vision algorithm 129
Image tracking, Mammalian vision 221
Parallel tracking
Motion flow model, Edge tracking 35
Parametric model
Identification of characteristic intensity variations, Cubic spline 273
Pattern analysis
Image processing, Component labelling 447
Pattern processing
Object recognition, Computational modelling 317
Perspective geometry
Pose determination, Object recognition 211

Planar region detection
Motion recovery, Projective invariant 229
Polar space
Vanishing point extraction, Linear computational complexity 91
Polynomial motion models
Motion structure estimation, Long sequence motion analysis 549
Pose determination
Image interpretation, Model-based verification 49
Object recognition, Perspective geometry 211
Probabilistic relaxation
Computer vision, Junction detection 197
Probability measures
Vanishing point, Vanishing point detection 240
Projective invariant
Planar region detection, Motion recovery 229

Quadtree and bintree storage requirements
Image representation, Hierarchical data structures 402
Quadtree and bintree storage requirements
Image representation, Hierarchical data structures 402
Image representation, Overlapping data structures 257

Recognizing faces
Surfaces, Face measurement 353
Regions
Hand-wrist radiographs, Image segmentation 100
Representation
Shape, Model 309
Shape perception, Geometry 389
Retinal image segmentation
Mathematical morphology, Texture 139
Rotation transformations
Quadtrees, Digital geometry 112

Segmentation
Image interpretation, Knowledge-based system 122
Transparent plant cells, Boundaries 155
Segmentation motion analysis
Target recognition, Image registration 570
Sensitivity
Camera calibration, Measurement accuracy 656
Shape
Feature variables, Gesture recognition 283
Model, Representation 309
Line labelling, Computational modelling 342
Shape perception
Representation, Geometry 389
Shape recognition
Fish species recognition, Colour analysis 2
Shape recognition
Object recognition, Volumetric primitives 364
Sinusoid encoded illumination
3D scene modelling, Depth estimation algorithm 251
Skeletonization
Thinning algorithm, Image processing 588
Skeletonization algorithm
Euclidean distance map, Centre-of-maximal-disc 163
Small angle approximations
Stereo geometry, Stereo disparity 395
Spatial database management
Image understanding, Image processing 25
Spatial indexing
Image databases, Image retrieval 504
State space parallel search
Parallel processing, Vision algorithm 129
Statistical detection
Movement detection, Motion segmentation 180
Stereo
Camera calibration, Active vision 67
Stereo disparity
Stereo geometry, Small angle approximations 395
Stereo geometry
Stereo disparity, Small angle approximations 395
Stereotactic neurosurgery
Nonlinear filtering, Magnetic resonance angiography 468
Structure and motion estimation
Structure from motion, Image sequence analysis 203
Structure from motion
Hypothesis testing paradigm, 3D motion 145
Structure and motion estimation, Image sequence analysis 203
Surfaces
Recognizing faces, Face measurement 353

Target detection and tracking
Target trajectory continuity, Temporal continuity and smoothness 641
Target recognition
Segmentation motion analysis, Image registration 570
Target trajectory continuity
Target detection and tracking, Temporal continuity and smoothness 641
Template matching
Correlation methods, Object recognition 188
Temporal continuity and smoothness
Target detection and tracking, Target trajectory continuity 641
Texture
Retinal image segmentation, Mathematical morphology 139

Thinning algorithm
Image processing, Skeletonization 588
Tissue microscopy
Autofocusing, Image sharpness 629
Tomography
Image reconstruction, Neural networks 278
Transparent plant cells
Segmentation, Boundaries 155
Two-dimensional mesh
Component labelling, Connected component shrinking 665
Vanishing point
Vanishing point detection, Probability measures 240
Vanishing point detection
Vanishing point, Probability measures 240
Vanishing point extraction
Polar space, Linear computational complexity 91
Vision algorithm
Parallel processing, State space parallel search 129
Volumetric primitives
Object recognition, Shape representation 364

Book reviews, 531–532

Calendar, 119, 174, 246, 302, 399, 456, 534–535, 605, 669

Editorial, 179, 307, 458–459